REMARKS

In the Non-Final Office Action of November 1, 2005, claims 1-20 are pending. Claims 1, 6, 9-10, and 20 are herein amended for clarification reasons. Claims 1, 9, and 20 are independent claims from which all other claims depend therefrom.

Claims 1-4, 6-7, 9, 12, 15-18, and 20 stand rejected under 35 U.S.C. 102(e) as being unpatentable over Morizane et al. (2002/0026274).

Claims 1 and 9 have similar limitations and are therefore described together. Claims 1 and 9 recite a sensing system for a vehicle and a method of performing safety system operations within a vehicle. The sensing system of claim 1 includes the limitations of a single vision sensor having a position with coordinates on the vehicle and a controller generating a safety system signal in response to the coordinates. In claim 1, the controller determines position of the single vision sensor relative to a predetermined reference on the vehicle that has determined coordinates. The method of claim 9 includes similar limitations, specifically, determining the coordinates of only a single vision sensor relative to determined reference point coordinates on the vehicle and generating a safety system signal in response to the determined position.

In response to Applicant's previously submitted arguments, the Office Action states that Applicant argued that Morizane does not teach the coordinates of a camera device. Applicant argued in the Response of September 14, 2005, that Morizane fails to teach or suggest the determining of vision sensor or camera coordinates. The Office Action states that Morizane teaches coordinates of a camera device and refers to paragraph [0075] of Morizane for such reliance. Applicant, respectfully, traverses and submits that not only does Morizane fail to disclose determining the coordinates of a camera on a vehicle, Morizane also fails to disclose the determining of such coordinates relative to determined or known coordinates of a reference point on the vehicle.

In paragraph [0075] Morizane discloses determining a reference parameter value, namely value W_0, which is the reference width of a leading vehicle. Morizane states that the value W_0 is determined based on the braking distance L between the leading vehicle and the host vehicle. In calculating the value W_0 the technique of Morizane assumes that the travel direction of the host vehicle is along the z-axis and the lens of the camera is at the origin. The width of the leading vehicle is then determined based on the braking distance from the origin. Note that it is irrelevant where the camera is located within the host vehicle of Morizane; the width calculation is based on the lens of the camera being at the origin. Also, note that the actual coordinates of the camera are not determined, since such coordinates are not needed or used to determine the width calculated. In Morizane the coordinates utilized for the width calculation are always (0,0,0) no matter where the camera is located. The coordinates or origin that Morizane mentions are not vehicle coordinates that are determined, but rather are assumed coordinates of a hypothetical coordinate system whereby the camera lens at the origin.

Claim 6 recites the limitation of a controller that determines the position of a single vision sensor relative to the coordinates of a hoodline of a vehicle. The Office Actions state that Morizane provides such disclosure in Figures 2A-2C. Applicant traverses. In Figures 2A-2C Morizane discloses the relationship between the change in following distance and the change in a picture of a leading vehicle. Figures 2A-2C show that the viewed size of a leading vehicle decreases as the following distance increases. There is no disclosure in Figures 2A-2C or anywhere else in Morizane of the coordinates of a hoodline or the determination of the position of a vision sensor relative to the coordinates of a hoodline. Thus, claim 6 is further novel and nonobvious for the above-stated reasons.

With respect to claims 7 and 15-17 see arguments below with respect to claim 20, which further profess additional reasons why claims 7 and 15-17 are novel and nonobvious.

Claim 20 is similar to claims 1 and 9 and recites an adaptive cruise control system and the limitations of a controller that determines the size and vertical up-angle of a detected object in response to the coordinates of a single vision sensor, determines the range of the object in response to the size and vertical up-angle, and reduces the speed of the vehicle in response to the range. Since Morizane fails to teach or suggest determining the coordinates of a single vision sensor, Morizane also fails to teach or suggest any of the other stated limitations, which are performed in response thereto.

Also, with respect to claim 20, Morizane also fails to teach or suggest determining both the size and the vertical up-angle of a detected object, and thus the range of the object in response to the size and vertical up-angle. The Office Actions state that Morizane discloses determining size and up-angle and refers to paragraphs [0004] and [0054] and to Figures 1, 2, 5, 7, 10, 11, 14, 15, 18, and 23 of Morizane for such reliance. Applicant submits that in the stated paragraphs and Figures, Morizane only discloses determining the width of a leading vehicle. Morizane does not disclose determining up-angle or vertical up-angle of an object. In determining up-angle, the claimed invention is better capable of determining when a detected object is at a different elevation than that of the host vehicle. Up-angle knowledge of an object aids in determining actual size and range of the object. The elevation of an object or the change in apparent size of an object due to change in elevation is not mentioned in Morizane.

The Office Action states that Morizane, in paragraph [0002], teaches how to control the distance between vehicles, which is the same as the range in response of the camera input. Applicant submits that the disclosure in paragraph [0002] of Morizane and the ability to determine the range in response to camera input is irrelevant. In paragraph [0002], Morizane discloses the adjusting of following distance between vehicles based on information within the image of a leading vehicle. The relative position claimed allows a controller to accurately determine the size, up-angle, and range of an object via a single vision sensor. In Morizane, as stated the range

is simply determined in response to the width of the leading vehicle not in response to the actual position of a vision sensor within a vehicle. Besides there is no mention anywhere in Morizane of using the coordinates of a reference point on a vehicle, and especially not the coordinates of a vision sensor relative to reference point coordinates, to determine the range of a leading vehicle.

In order for a reference to anticipate a claim the reference must teach or suggest each and every element of that claim, see MPEP 2131 and *Verdegaal Bros. V. Union Oil Co. of California*, 814 F.2d 628. Thus, since Morizane fails to teach or suggest each and every element of claims 1 and 9, and a majority of the elements of claim 20, claims 1, 9, and 20 are novel, nonobvious, and are in a condition for allowance. Therefore, since claims 2-4, 6-7, 11-12, and 15-19 depend from claims 1 and 9, respectively, they too are also novel, nonobvious, and allowable for at least the same reasons.

Claims 5, 8, 10, and 13-14 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Morizane in view of Hirabayashi (U.S. Pat. No. 5,874,904). Claim 5 is herein canceled. Note that Applicant provided arguments for the allowance of claims 8, 10, and 13-14 in the Response of September 14, 2005. The Examiner has not responded to those arguments. Applicant submits that the arguments remain valid. The stated arguments are reiterated along with additional arguments below for the allowability of claims 8, 10, and 13-14.

Applicant submits that since claims 8, 10, and 13-14 depend from claims 1 and 9, respectively, they too are novel, nonobvious, and are in a condition for allowance for at least the same reasons.

With respect to claim 8, the Office Action of June 20, 2005 states that Morizane does not teach a memory coupled to a controller and storing the information regarding position, which is restated in the current Office Action. Applicant agrees. However, the June 20, 2005 Office Action states that Hirabayashi teaches this in Figure 24. Applicant traverses. Although Hirabayashi discloses a memory, the memory is not used to store a predetermined position of a single vision sensor. The memory 55 of Figure 24

is used to store image data. This is stated in col. 1, lines 39-45. Nowhere in Hirabayashi or in Morizane is the storage of the position or coordinates of a single vision sensor stored. See above with regards to Morizane, which only and always assumes that the coordinates of a lens of a camera are at the origin. Thus, claim 8 is further novel and nonobvious for the stated reasons.

With respect to claim 10, the June 20, 2005 Office Action states that Hirabayashi provides the limitations of claim 10 and refers to col. 1, lines 60-67, and col. 2, lines 1-13 of Hirabayashi, which is restated in the current Office Action. Applicant traverses. Claim 10 is herein amended and includes the limitations of determining the relative vertical positioning of a single vision sensor relative to reference point coordinates on a vehicle.

In col. 1, lines 60-67, and col. 2, lines 1-13, Hirabayashi discloses using the coordinates of multiple sensor arrays to establish triangular relationships for determination of the distance of a target. The coordinates are determined relative to an x-axis passing through the sensor arrays and a midpoint or origin between the sensor arrays. The coordinates are not determined in relation to a reference point on a vehicle. The location of the sensor arrays determines the midpoint therebetween, or in other words, the midpoint is dependent upon the position of the sensor arrays. This is unlike the claimed invention in which position of the single vision sensor is determined relative to a reference point on a vehicle. Thus, the position or the coordinates of the single vision sensor claimed are dependent upon the location of the reference point. Also, although the midpoint determined in Hirabayashi may be associated with a position or point on a vehicle, such association is not made by the system of Hirabayashi. Besides, nowhere in Hirabayashi or in Morizane are the coordinates of only a single vision sensor determined relative to a reference point on a vehicle.

Moreover, neither Hirabayashi nor in Morizane teach or suggest determining the relative vertical positioning of a vision sensor on a vehicle. Both Hirabayashi and Morizane disclose determining distance or range within a single plane or by assuming that the host vehicle and the leading

vehicle are on the same elevation. Hirabayashi uses triangulation over a single plane to determine distance. Morizane monitors the width of a leading vehicle to determine range. Neither reference accounts for change in elevations between a host vehicle and an object. Thus, claim 10 is further novel and nonobvious.

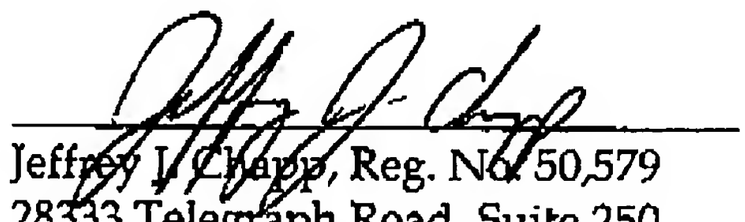
With respect to claim 13, the Office Actions are silent with respect to the limitations of determining the object to be at a different elevation than the vehicle when the object appears to maintain a same height and width, but change in vertical position. The Applicant submits that the stated limitations are not taught or suggested by the relied upon references. As stated, neither reference teaches determining the elevation of an object or the elevation of an object relative to a host vehicle. Thus, clearly performing such determination when the object appears to maintain a same height and width, but change in vertical position is also not taught or suggested. Therefore, claim 13 is further novel and nonobvious for the above-stated reasons.

Referring to MPEP 706.02(j) and 2143, to establish a *prima facie* case of obviousness the prior art reference(s) must teach or suggest all the claim limitations. Thus, Applicant submits that since Hirabayashi and Morizane clearly fail to teach or suggest several of the limitations of claims 8, 10, and 13-14, they are novel, nonobvious, and are in a condition for allowance.

In light of the amendments and remarks, Applicant submits that all the rejections are now overcome. The Applicant has added no new matter to the application by these amendments. The application is now in condition for allowance and expeditious notice thereof is earnestly solicited. Should the Examiner have any questions or comments, the Examiner is respectfully requested to contact the undersigned attorney.

Respectfully submitted,

ARTZ & ARTZ, P.C.



Jeffrey J. Chapp, Reg. No. 50,579
28333 Telegraph Road, Suite 250
Southfield, MI 48034
(248) 223-9500

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